

Rec'd PCT/PTO 16 APR 2002



PCT09

RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/09/857,613A

DATE: 06/04/2002  
 TIME: 16:05:41

Input Set : A:\BB1289 US PCT SEQLIST.txt  
 Output Set: N:\CRF3\06042002\I857613A.raw

P.6

ENTERED

3 <110> APPLICANT: Rafalski, J. Antoni  
 4 Cahoon, Rebecca E.  
 5 Coughlan, Sean  
 6 Miao, Guo-Hua  
 8 <120> TITLE OF INVENTION: PLANT VITAMIN E BIOSYNTHETIC ENZYMES  
 10 <130> FILE REFERENCE: BB-1289  
 12 <140> CURRENT APPLICATION NUMBER: 09/857,613A  
 13 <141> CURRENT FILING DATE: 2002-04-16  
 15 <150> PRIOR APPLICATION NUMBER: PCT/US99/28588  
 16 <151> PRIOR FILING DATE: 1999-12-02  
 18 <150> PRIOR APPLICATION NUMBER: 60/110,781  
 19 <151> PRIOR FILING DATE: 1998-12-03  
 21 <160> NUMBER OF SEQ ID NOS: 43  
 23 <170> SOFTWARE: Microsoft Office 97  
 25 <210> SEQ ID NO: 1  
 26 <211> LENGTH: 792  
 27 <212> TYPE: DNA  
 28 <213> ORGANISM: Zea mays  
 30 <220> FEATURE:  
 31 <221> NAME/KEY: unsure  
 32 <222> LOCATION: (586)  
 33 <223> OTHER INFORMATION: n= a, c, g, or t  
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 36 <221> NAME/KEY: unsure  
 37 <222> LOCATION: (718)  
 38 <223> OTHER INFORMATION: n= a, c, g, or t  
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 42 <222> LOCATION: (762)  
 43 <223> OTHER INFORMATION: n= a, c, g, or t  
 45 <220> FEATURE:  
 46 <221> NAME/KEY: unsure  
 47 <222> LOCATION: (773)  
 48 <223> OTHER INFORMATION: n= a, c, g, or t  
 50 <220> FEATURE:  
 51 <221> NAME/KEY: unsure  
 52 <222> LOCATION: (782)  
 53 <223> OTHER INFORMATION: n= a, c, g, or t  
 55 <220> FEATURE:  
 56 <221> NAME/KEY: unsure  
 57 <222> LOCATION: (790)  
 58 <223> OTHER INFORMATION: n= a, c, g, or t  
 60 <400> SEQUENCE: 1

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61 gttgagccct gttcaagccg agagaggaaa tgctctcgct gcagcgcagg ggttgctcgga 60
62 tcaggttact ctgcaagttg ctgatgctct ggagcaaccg ttctctgacg ggcagttcga 120
63 tctggtgtgg tccatggaga gtggcgagca catgccggac aagagaaagt ttgttagtga 180
64 gctagcacgc gtggcggtct ctggaggggac aataatcatc gtgacatggt gccataggaa 240
65 cctggatcca tccgaaacct cgctaaagcc cgatgaactg agcctcctga ggaggatatg 300
66 cgacgcgtac tacctcccgg actggtgctc accttcagac tatgtgaaca ttgccaagtc 360
67 actgtctctc gaggatatca agacagctga ctggtcggag aacgtggccc cgttttggcc 420
68 cgccgtgata aaatcagcgc taacatggaa gggcttcacc tctctgctga cgaccggatg 480
69 gaagacgata agaggcgcca tggatgctc gctaataatc cagggctaca agaaggggct 540
W--> 70 catcaaattc accatcatca cctgtcgcaa gcctggagcc gcgtangagg aggcaaggag 600
W--> 71 cacaagttac tagcacaga caggatgcaa gtgcatatgt agatcatggc acatcgccgt 660
W--> 72 cactcatcat actgcacaaa atcaaattctc caggacattt aataattctg cacctcanat 720
W--> 73 attcaggggg gccgggtacca atcgccatat gatctatacc gnccacggcg tcnttaactc 780
W--> 74 tnacggaaan ct 792

76 <210> SEQ ID NO: 2
77 <211> LENGTH: 191
78 <212> TYPE: PRT
79 <213> ORGANISM: Zea mays
81 <400> SEQUENCE: 2
82 Leu Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln
83 1 5 10 15
85 Gly Leu Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln
86 20 25 30
88 Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly
89 35 40 45
91 Glu His Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val
92 50 55 60
94 Ala Ala Pro Gly Gly Thr Ile Ile Val Thr Trp Cys His Arg Asn
95 65 70 75 80
97 Leu Asp Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu
98 85 90 95
100 Arg Arg Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser
101 100 105 110
103 Asp Tyr Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr
104 115 120 125
106 Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys
107 130 135 140
109 Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp
110 145 150 155 160
112 Lys Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr
113 165 170 175
115 Lys Lys Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro
116 180 185 190
118 <210> SEQ ID NO: 3
119 <211> LENGTH: 521
120 <212> TYPE: DNA
121 <213> ORGANISM: Oryza sativa
123 <220> FEATURE:
124 <221> NAME/KEY: unsure

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Input Set : A:\BB1289 US PCT SEQLIST.txt

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125 <222> LOCATION: (269)  
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129 <221> NAME/KEY: unsure  
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131 <223> OTHER INFORMATION: n= a, c, g, or t  
133 <220> FEATURE:  
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135 <222> LOCATION: (286)  
136 <223> OTHER INFORMATION: n= a, c, g, or t  
138 <220> FEATURE:  
139 <221> NAME/KEY: unsure  
140 <222> LOCATION: (302)  
141 <223> OTHER INFORMATION: n= a, c, g, or t  
143 <220> FEATURE:  
144 <221> NAME/KEY: unsure  
145 <222> LOCATION: (330)  
146 <223> OTHER INFORMATION: n= a, c, g, or t  
148 <220> FEATURE:  
149 <221> NAME/KEY: unsure  
150 <222> LOCATION: (381) (382)  
151 <223> OTHER INFORMATION: n= a, c, g, or t  
153 <220> FEATURE:  
154 <221> NAME/KEY: unsure  
155 <222> LOCATION: (387)  
156 <223> OTHER INFORMATION: n= a, c, g, or t  
158 <220> FEATURE:  
159 <221> NAME/KEY: unsure  
160 <222> LOCATION: (398)  
161 <223> OTHER INFORMATION: n= a, c, g, or t  
163 <220> FEATURE:  
164 <221> NAME/KEY: unsure  
165 <222> LOCATION: (418)  
166 <223> OTHER INFORMATION: n= a, c, g, or t  
168 <220> FEATURE:  
169 <221> NAME/KEY: unsure  
170 <222> LOCATION: (429)  
171 <223> OTHER INFORMATION: n= a, c, g, or t  
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174 <221> NAME/KEY: unsure  
175 <222> LOCATION: (436)  
176 <223> OTHER INFORMATION: n= a, c, g, or t  
178 <220> FEATURE:  
179 <221> NAME/KEY: unsure  
180 <222> LOCATION: (462)  
181 <223> OTHER INFORMATION: n= a, c, g, or t  
183 <220> FEATURE:  
184 <221> NAME/KEY: unsure  
185 <222> LOCATION: (467)

## RAW SEQUENCE LISTING

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Input Set : A:\BB1289 US PCT SEQLIST.txt

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186 <223> OTHER INFORMATION: n= a, c, g, or t
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189 <221> NAME/KEY: unsure
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191 <223> OTHER INFORMATION: n= a, c, g, or t
193 <220> FEATURE:
194 <221> NAME/KEY: unsure
195 <222> LOCATION: (514)
196 <223> OTHER INFORMATION: n= a, c, g, or t
198 <400> SEQUENCE: 3
199 cttacagaca aacggcagtt tgtaagcgag ctggcacgcg tcgcagctcc tggggcgaga 60
200 ataatcattg tgacctggtg ccataggaac ctcgagccat ccgaagagtc cctgaaacct 120
201 gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180
202 ccttctgatt atgtcaaaat tgccgagtca ctgtctcttg aggatataag gacagctgat 240
W- 203 tgggtcaagag aacgtcgccc caatccggnc tgcnggttat taaatnaagc aattgacatg 300
W- 204 gnaagggtta actttctcct ggctaagaan tgggtgggaa gacgattaag aaggtggaat 360
W- 205 ggggtgatgcc tccggatgat nnaaggntac aaagaaangg gtcaacaaat ttaacaanaa 420
W- 206 caacctgtnc caaagncccg aaacaacgca ataatacccc antaatnaaa ttncgctcct 480
W-- 207 ggctaacctt ctccaacaac gaattaatgg aaanttctga c 521
209 <210> SEQ ID NO: 4
210 <211> LENGTH: 82
211 <212> TYPE: PRT
212 <213> ORGANISM: Oryza sativa
214 <400> SEQUENCE: 4
215 Leu Thr Asp Lys Arg Gln Phe Val Ser Glu Leu Ala Arg Val Ala Ala
216 1 5 10 15
218 Pro Gly Ala Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu
219 20 25 30
221 Pro Ser Glu Glu Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg
222 35 40 45
224 Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr
225 50 55 60
227 Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp
228 65 70 75 80
230 Trp Ser
233 <210> SEQ ID NO: 5
234 <211> LENGTH: 592
235 <212> TYPE: DNA
236 <213> ORGANISM: Oryza sativa
238 <220> FEATURE:
239 <221> NAME/KEY: unsure
240 <222> LOCATION: (295)
241 <223> OTHER INFORMATION: n= a, c, g, or t
243 <220> FEATURE:
244 <221> NAME/KEY: unsure
245 <222> LOCATION: (342)
246 <223> OTHER INFORMATION: n= a, c, g, or t
248 <220> FEATURE:
249 <221> NAME/KEY: unsure

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TIME: 16:05:41

Input Set : A:\BB1289 US PCT SEQLIST.txt

Output Set: N:\CRF3\06042002\I857613A.raw

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251 <223> OTHER INFORMATION: n= a, c, g, or t
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254 <221> NAME/KEY: unsure
255 <222> LOCATION: (495)
256 <223> OTHER INFORMATION: n= a, c, g, or t
258 <220> FEATURE:
259 <221> NAME/KEY: unsure
260 <222> LOCATION: (519)
261 <223> OTHER INFORMATION: n= a, c, g, or t
263 <220> FEATURE:
264 <221> NAME/KEY: unsure
265 <222> LOCATION: (549)
266 <223> OTHER INFORMATION: n= a, c, g, or t
268 <400> SEQUENCE: 5
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270 gccacgggcg cactggcacc gctgcatcca ctgctccgct gcacgagccg tcatctctgc 120
271 gcctcggctt cccctcgcgc cggcctctgc ctccaccacc accgccgccg ccgccgcagc 180
272 agccggagga cgaaactcgc cgtgcgcgcgc atggcaccga cgttgctcctc gtcgtcgacg 240
W--> 273 gcggcggcag ctcccccggg gctgaaggag ggcacgcggg ggctctacga cgaancgtcc 300
W--> 274 ggcgtgtggg agagcatctg gggcgagcac atgcaccacg gnttctacga cgccggcgag 360
275 ggcgcctcca tgtccgacca ccgccgcgcc ccagttcgca tgatcgagga cctcgccttc 420
276 gccgcctccc cgatgatcgg agaagaacca aaatgtattg atttggtgtg gattggtggt 480
W--> 277 actcaagata ntggngaaca atacggacgc atgctacgna tacttgatcg gtgcagggtga 540
W--> 278 aagagaaaanc ctcgcgcaga caaggtatag caagtccctt taagttgtat ga 592
280 <210> SEQ ID NO: 6
281 <211> LENGTH: 144
282 <212> TYPE: PRT
283 <213> ORGANISM: Oryza sativa
285 <220> FEATURE:
286 <221> NAME/KEY: UNSURE
287 <222> LOCATION: (99)
288 <223> OTHER INFORMATION: Xaa = ANY AMINO ACID
290 <400> SEQUENCE: 6
291 Leu Thr Cys Lys Leu Val Pro Asn Ser Ala Arg Ala Tyr Lys Met Ala
292 1 5 10 15
294 His Ala Ala Ala Ala Thr Gly Ala Leu Ala Pro Leu His Pro Leu Leu
295 20 25 30
297 Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly
298 35 40 45
300 Leu Cys Leu His His His Arg Arg Arg Arg Ser Ser Arg Arg Thr
301 50 55 60
303 Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr
304 65 70 75 80
306 Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr
307 85 90 95
W--> 309 Asp Glu Xaa Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His
310 100 105 110
312 His Gly Phe Tyr Asp Ala Gly Glu Gly Ala Ser Met Ser Asp His Arg

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RAW SEQUENCE LISTING ERROR SUMMARY      DATE: 06/04/2002  
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Input Set : A:\BB1289 US PCT SEQLIST.txt  
Output Set: N:\CRF3\06042002\I857613A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 586,718,762,773,782,790  
Seq#:3; N Pos. 269,274,286,302,330,381,382,387,398,418,429,436,462,467,473  
Seq#:3; N Pos. 514  
Seq#:5; N Pos. 295,342,491,495,519,549  
Seq#:6; Xaa Pos. 99  
Seq#:9; N Pos. 385,396,909  
Seq#:10; Xaa Pos. 127,128,129,130,131,132,133  
Seq#:11; N Pos. 361,368,401,418,428  
Seq#:13; N Pos. 315,325,395,438,472,488,491,492,502,526,535,537,546,563,582  
Seq#:13; N Pos. 590,602,617,620,623  
Seq#:14; Xaa Pos. 103  
Seq#:15; N Pos. 617,829,841,876,911,918,919,927,936,938,969,979,981,992  
Seq#:15; N Pos. 1004,1012,1017  
Seq#:16; Xaa Pos. 202  
Seq#:17; N Pos. 494  
Seq#:18; Xaa Pos. 165  
Seq#:19; N Pos. 567,596,627,639,655,697,709,1039,1066,1116,1152  
Seq#:21; N Pos. 454,1072,1083,1092,1100  
Seq#:22; Xaa Pos. 152  
Seq#:23; N Pos. 269,274,286,302,330,381,382,387,398,418,429,436,462,467,473  
Seq#:23; N Pos. 514  
Seq#:29; N Pos. 31,151  
Seq#:30; Xaa Pos. 5,45